## **CLAIMS:**

## We Claim:

- A novel automatic background color change assembly for a monochrome LCD comprising:
- a white light emitting backlight device, serving as source of light for a monochrome LCD;
- a dichroic cell serving as a voltage dependent color absorption medium;
- a liquid crystal monochrome display that displays information with a background color supplied by the said dichroic cell;

said dichroic cell receiving the light from the said white backlight device;

- said white backlight device over which is assembled the said 'dichroic' cell over which is assembled the said monochrome LCD to be in alignment;
- said 'dichroic' cell applied with programmed voltages that relates to the information being displayed on LCD screen;
- said monochrome LCD exhibiting the background color as supplied by the said dichroic cell:
- means for externally connecting the said LCD, the said dichroic cell and the said backlight device to their source voltages.
- An automatic background color change assembly as claimed in claim 1
  wherein the said monochrome LCD is removed and the resulting assembly is
  used as color changeable backlight assembly.
- An automatic background color change assembly as claimed in claim 1
  wherein the said dichroic cell is replaced with Electrically Controlled
  Birefringence liquid crystal cell.
- An automatic background color change assembly as claimed in claim 1
   wherein the said liquid crystal display is replaced with an Electro-phoretic cell.
- 5. An automatic background color change assembly as claimed in claim 1 wherein the number of said dichroic cell is more than one.

- 6. An automatic background color change assembly as claimed in claim 1 wherein the assembly is used in cell phones for changing the background color of LCD depending on the source of information and nature of information.
- 7. An automatic background color change assembly as claimed in claim 1 wherein the said backlight device emits bands of wavelengths between 400 nm and 700 nm.
- 8. An automatic background color change assembly as claimed in claim 1 wherein the said monochrome LCD, the said dichroic cell and the said backlight device are intimately placed in contact with each other in a flat panel display system.
- 9. An automatic background color change assembly as claimed in claim 1, wherein the said dichroic cell comprises LC molecules of positive dielectric anisotrpy.
- An automatic background color change assembly as claimed in claim 1, wherein the said dichroic cell comprises LC molecules of negative dielectric anisotrpy.
- 11. An automatic background color change assembly as claimed in claim 9 wherein the said dichroic cell comprises LC molecules of positive dielectric anisotrpy and a combination of positive and negative dichroic dye molecules.
- 12. An automatic background color change assembly as claimed in claim 10 wherein the said dichroic cell comprises LC molecules of negative dielectric anisotrpy and a combination of positive and negative dichroic dye molecules.
- 13. An automatic background color change assembly as claimed in claim 9 and 10 wherein the said dye molecules in the said dichroic cell comprises concentration of dye molecules in the range of 0.1% to 30%.
- 14. An automatic background color change assembly as claimed in claim 13 wherein the said dichroic cell comprises dye molecules absorbing characteristic wavelengths ranging from 400 nm to 700 nm.

- 15. An integrated assembly of a novel automatic background color change for a monochrome LCD comprising:
- a liquid crystal monochrome display having a top substrate whose inner surface is facing the inner surface of its bottom substrate;
- said bottom substrate having its outer surface, serving as the inner surface and top substrate of a dichroic cell:
- said dichroic cell sharing the bottom substrate of the said liquid crystal display as its top substrate;
- said dichroic cell having it's inner surface of its bottom substrate facing the inner surface of its top said shared substrate;
- said dichroic cell whose outer surface of its bottom substrate serving as inner surface of a backlight device;
- said backlight device sharing the bottom substrate of the said dichroic cell as its top substrate:
- said backlight device having its inner surface of its bottom substrate facing the inner surface of its top shared substrate;
- said substrates of said liquid crystal display, said dichroic cell and said backlight device are all bonded together through a perimeter seal to form an integrated assembly;
- means for externally connecting the said LCD, the said dichroic cell and the said backlight device to their source voltages.
- 16. An automatic background color change assembly as claimed in claims 1 through 29 and employed in end-user display systems to alert the user on emergency messages automatically switching the background color.
- 17. An automatic background color change assembly as claimed in claims 1 through 17 and employed in hand-held and mobile wireless phone application to distinguish the caller.